KOHLER Power Systems

TIB-102

TECHNICAL INFORMATION BULLETIN

Alternator Data Sheet

Alternator Model: 4P5
Frequency: 60 Hz
Speed: 1800 RPM
Leads: 12 (6 Lead, 600 Volt)

Voltage L-N/L-L	Phase	Power Factor	Connection	kW* (kVA)						
				Class B	Class F				Class H	
				80°C Continuous	90°C Lloyds	95°C ABS	105°C Continuous	130°C Standby	125°C Continuous	150°C Standby
139/240 277/480	3	0.8	Wye	33.8 (42.3)	35.7 (44.6)	36.6 (45.8)	38.1 (47.6)	40.0 (50.0)	40.0 (50.0)	40.0 (50.0)
127/220 254/440	3	0.8	Wye	33.6 (41.9)	35.3 (44.2)	36.1 (45.1)	37.5 (46.9)	40.3 (50.4)	39.5 (49.4)	41.5 (51.9)
120/208 240/416	3	0.8	Wye	33.4 (41.8)	35.1 (43.9)	35.8 (44.8)	37.2 (46.5)	39.7 (49.6)	39.2 (49.0)	40.7 (50.9)
110/190 220/380	3	0.8	Wye	28.0 (35.0)	29.5 (36.9)	30.0 (37.5)	32.0 (40.0)	35.0 (43.8)	34.0 (42.5)	35.0 (43.8)
120/240	3	0.8	Delta	33.4 (41.8)	35.1 (43.9)	35.8 (44.8)	37.2 (46.5)	39.7 (49.6)	39.2 (49.0)	40.7 (50.9)
120/240	1	1.0	Dogleg	27.0 (27.0)	28.0 (28.0)	28.5 (28.5)	30.0 (30.0)	33.0 (33.0)	32.0 (32.0)	33.0 (33.0)
120/240	1	0.8	Dogleg	17.0 (21.3)	18.0 (22.5)	18.5 (23.1)	20.0 (25.0)	22.0 (27.5)	21.5 (26.9)	22.0 (27.5)
347/600	3	0.8	Wye	33.8 (42.3)	35.7 (44.6)	36.6 (45.8)	38.1 (47.6)	40.0 (50.0)	40.0 (50.0)	40.0 (50.0)

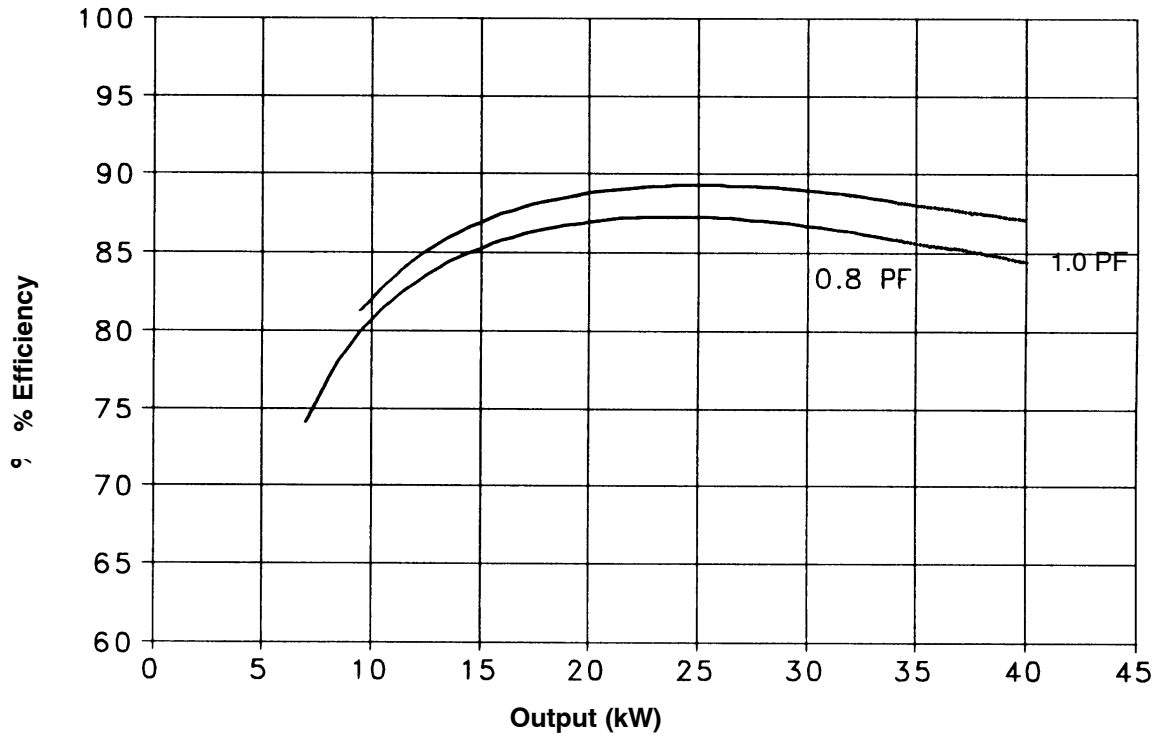
* All data tested in accordance with IEEE Standard 115. Kohler Co. reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

Submittal Data: 139/240 Volts, 0.8 PF, 1800 RPM, 60 Hz, 3-Phase, 130°C Rise

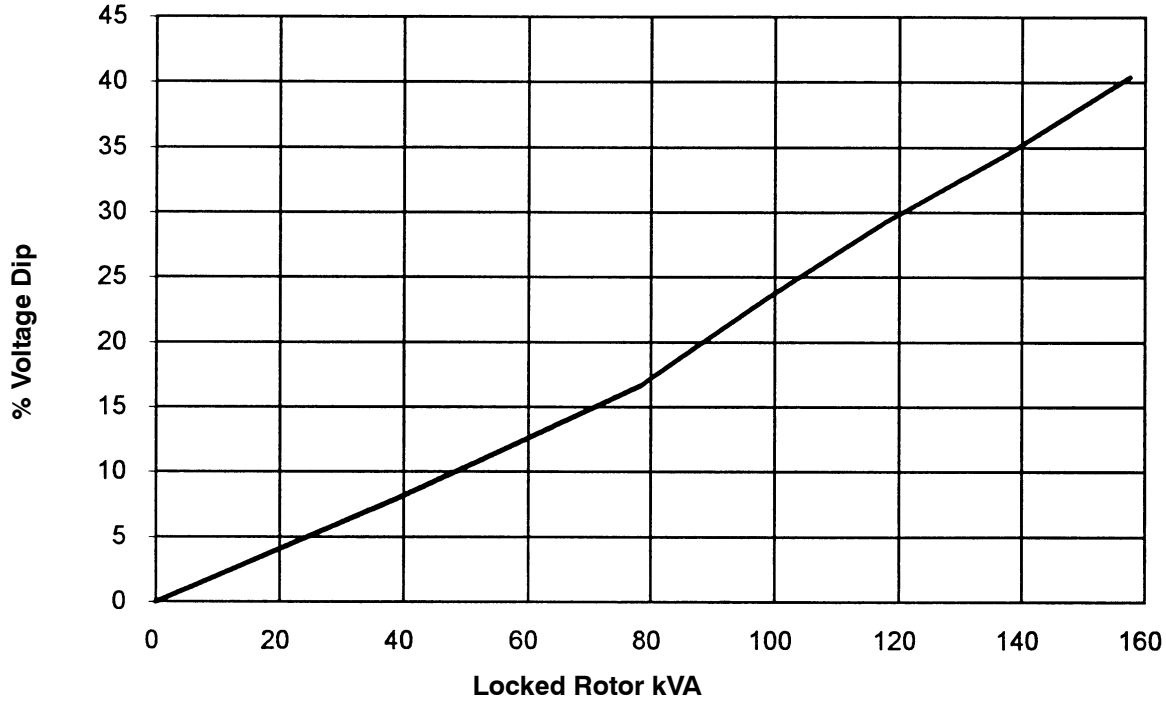
	Symbol	Per Unit	Ohms
Typical Resistances			
Phase Resistance		0.042	0.048
Rotor Resistance		2.266	2.610
Typical Reactances			
Synchronous			
Direct	X_d	3.087	3.556
Quadrature	X_q	1.506	1.735
Transient			
Unsaturated	X'_{du}	0.358	0.412
Saturated	X'_d	0.315	0.363
Subtransient			
Direct	X''_d	0.160	0.184
Quadrature	X''_q	0.141	0.163
Negative Sequence	X_2	0.150	0.173
Zero Sequence	X_0	0.012	0.014

	Symbol	Value
Typical Time Constants		
Armature Short Circuit	T_a	0.009 sec.
Transient Short Circuit	T'_d	0.075 sec.
Transient Open Circuit	T'_{do}	0.737 sec.
Typical Field Current		
Full Load	If_{FL}	22.6 amps
No Load	If_{NL}	6.0 amps
Typical Short Circuit Ratio		0.481
Harmonic Distortion		
RMS Total Harmonic Distortion		2.7%
Max. Single Harmonic		5^{th}
Deviation Factor (No Load, L-L)		4.9%
Telephone Influence Factor		<50
Insulation Class per NEMA MG1-1.66		H
Phase Rotation		ABC

4P5, 60 Hz, 139/240, 277/480 Volts, Wye
TYPICAL ALTERNATOR EFFICIENCY*



4P5, 60 Hz, 139/240, 277/480 Volts, Wye
TYPICAL MOTOR STARTING CHARACTERISTICS*



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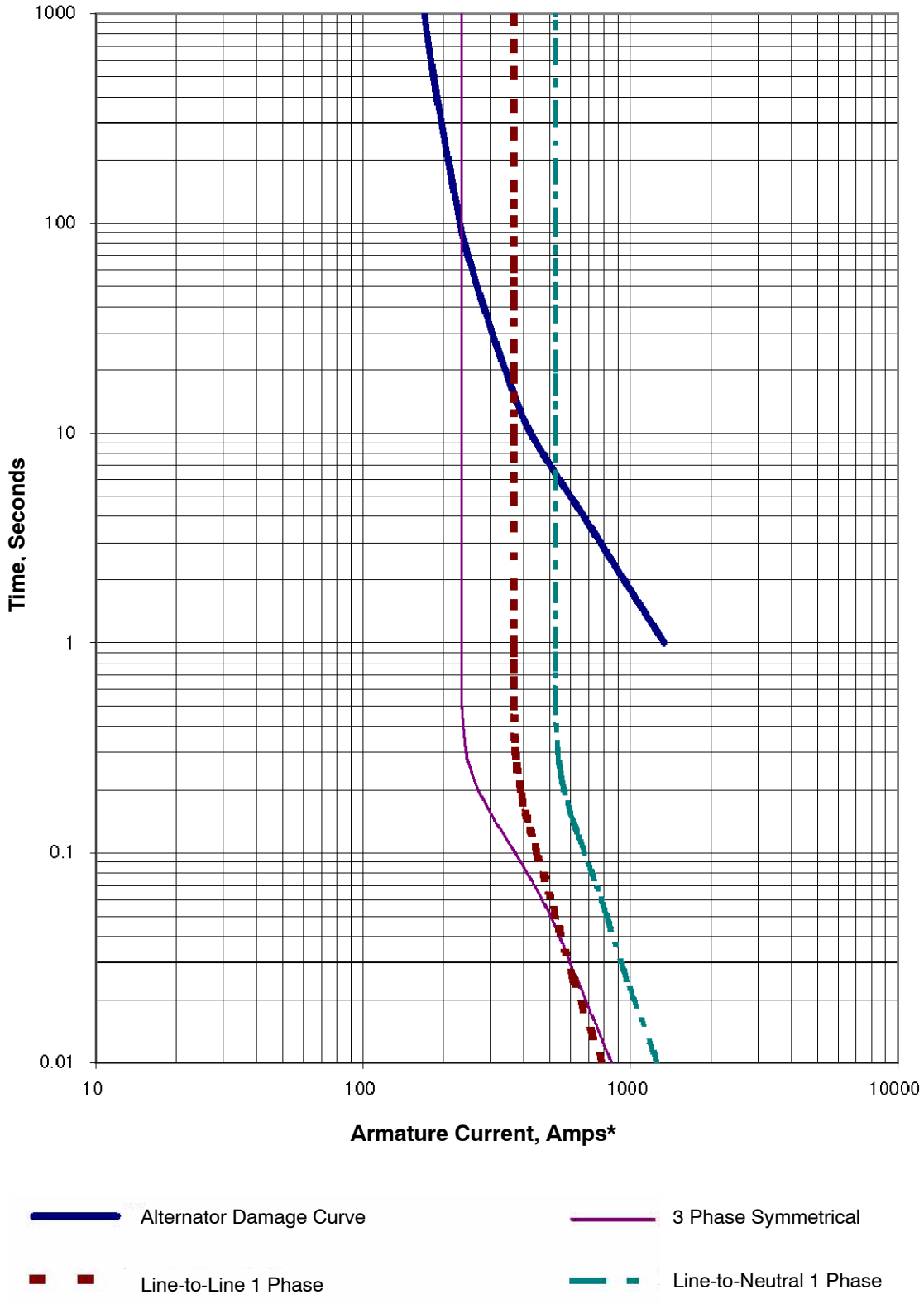
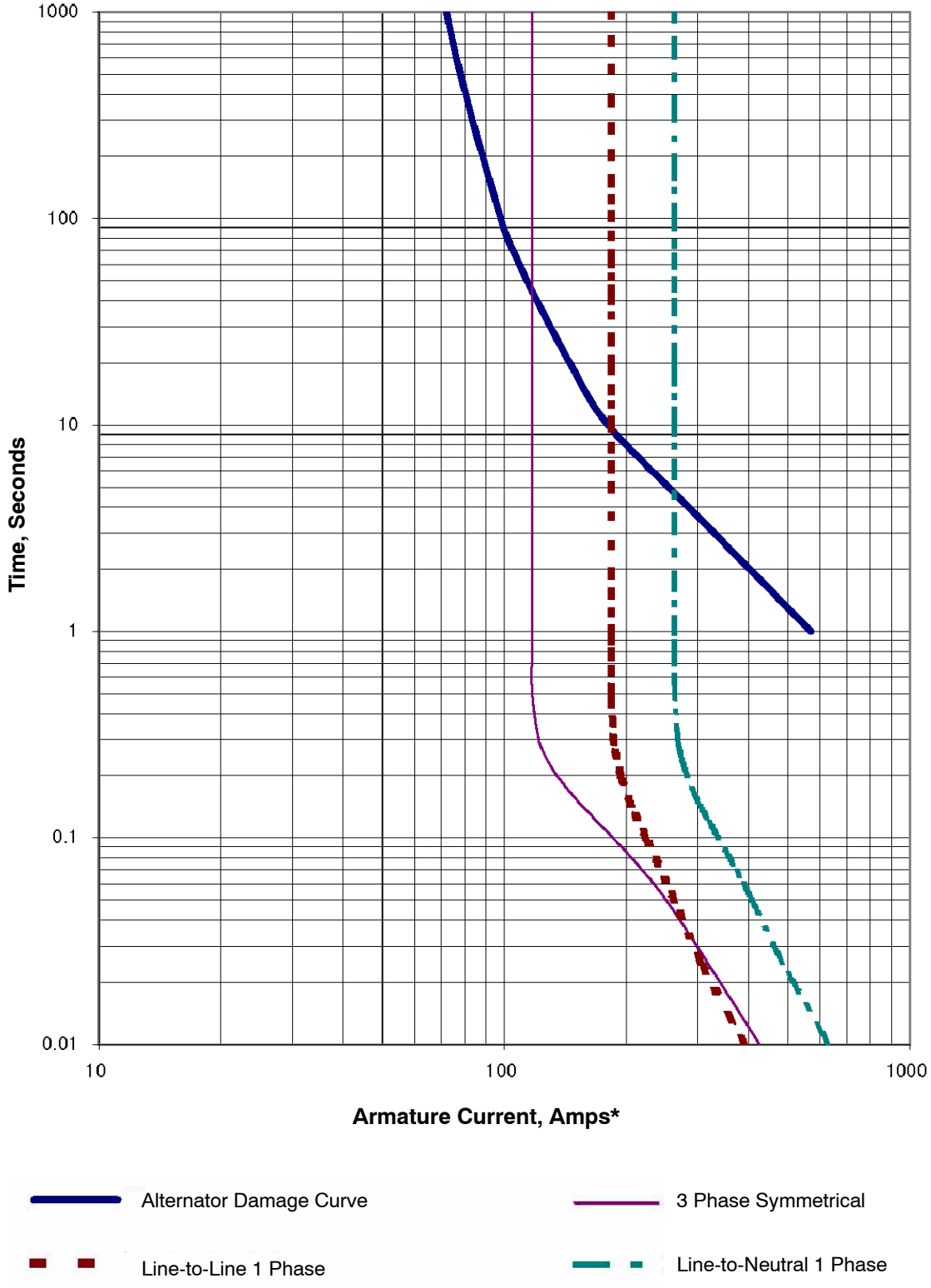
4P5, 60 Hz, Low Wye or Delta Connection
SHORT CIRCUIT DECREMENT CURVE



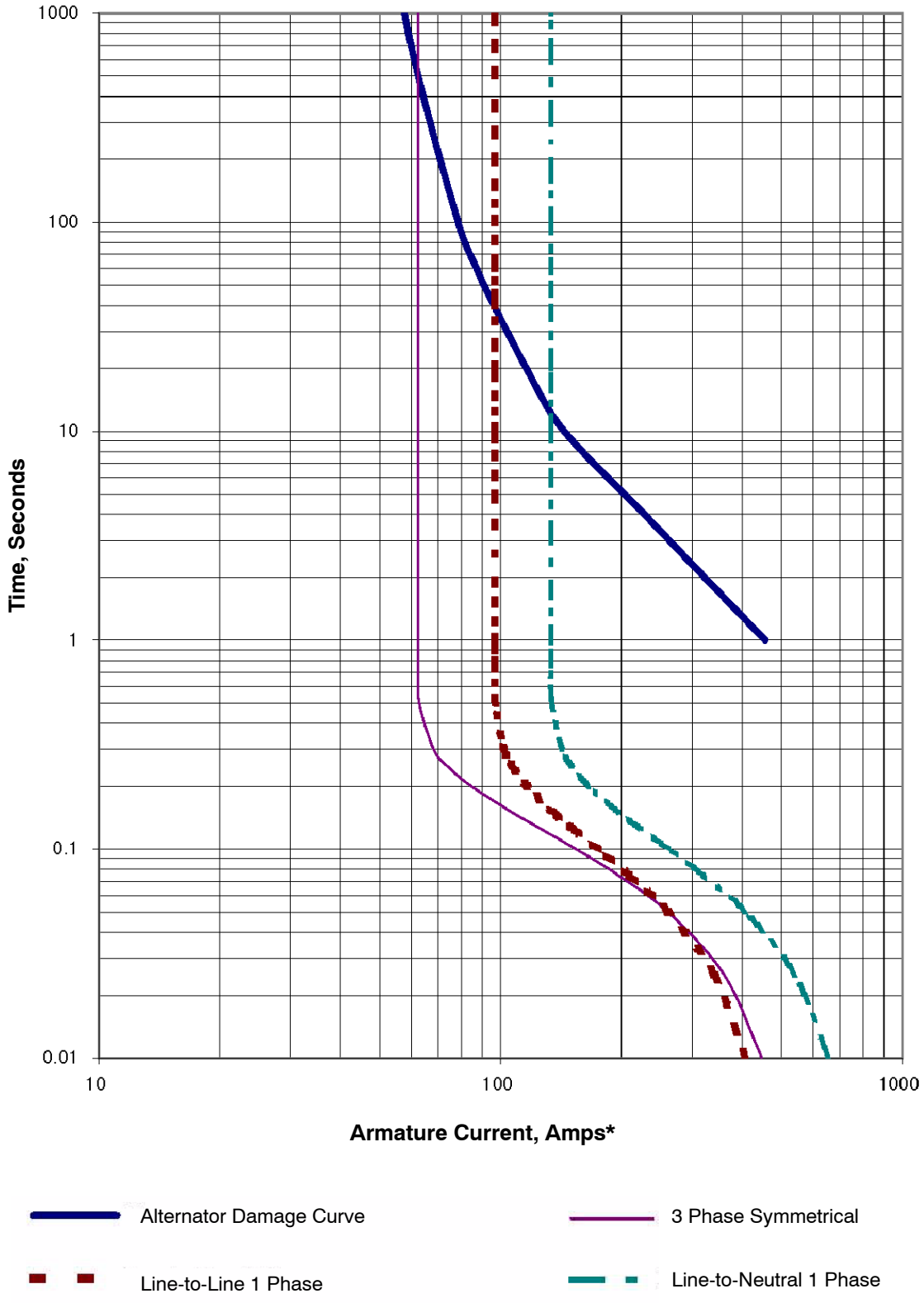
* Instantaneous current (t=0) is asymmetric. Divide by 1.732 for symmetric.

4P5, 60 Hz, High Wye Connection
SHORT CIRCUIT DECREMENT CURVE



* Instantaneous current (t=0) is asymmetric. Divide by 1.732 for symmetric.

4P5, 60 Hz, 600 V Connection
SHORT CIRCUIT DECREMENT CURVE



* Instantaneous current (t=0) is asymmetric. Divide by 1.732 for symmetric.